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REMARKS

Claims 1-16, 18-26 and 29-38 are pending in the application and stand rejected. Applicant has canceled Claims 11-12, 19, 36 and 38, and has amended Claims 10, 13, 18, 20, 25 and 37, leaving Claims 1-10, 13-16, 18, 20-26, 29-35 and 37 for consideration upon entry of the present Amendment.

Applicant respectfully submits that the rejections under 35 U.S.C. §102 and 35 U.S.C. §103(a) have been traversed, that no new matter has been entered, and that the application is in condition for allowance.

These amendments and accompanying remarks were not presented earlier because Applicant did not fully appreciate the nature of the Examiner's position until the Applicant was advised in more detail of the position by the final rejection. The claim amendments presented herein, which Applicant respectfully requests entry thereof, should require only a cursory review by the Examiner as they include only elements presented in earlier examined claims. Accordingly, such amendments should not require further consideration or search.

Rejections Under 35 U.S.C. §102

Claims 1-16, 18, 21-26, 29, 30, 32 and 34-36 stand rejected under 35 U.S.C. §102(e) as being anticipated by Sontag et al (U.S. Pat. No. 6,076,005, hereinafter Sontag).

At the outset, and in view of the publication date of Sontag, Applicant understands this rejection as being applied under 35 U.S.C. §102(b).

Applicant traverses this rejection for the following reasons.

Applicant respectfully submits that "[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, *in a single prior art reference.*" *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987) (Emphasis added). Moreover, "[t]he identical invention must be shown in as complete detail as is contained in the *** claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). Furthermore, the single source must disclose all of the claimed elements "*arranged as in the claim.*" *Structural Rubber Prods. Co. v. Park Rubber Co.*, 749 F.2d 707, 716, 223 U.S.P.Q. 1264, 1271 (Fed. Cir. 1984) (Emphasis added). Missing elements may not be supplied by the knowledge of one skilled

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in the art or the disclosure of another reference. Titanium Metals Corp. v. Banner, 778 F.2d 775, 780, 227 U.S.P.Q. 773, 777 (Fed. Cir. 1985).

Regarding Claim 1

Claim 1 recites, inter alia,

“...selecting a non-electrical sensor, the non-electrical sensor being an *acceleration sensor*; and,

utilizing the non-electrical sensor to acquire information *for gating*.”

Dependent claims inherit all of the limitations of the parent claim.

In alleging anticipation, the Examiner alleges that Sontag discloses each and every element of the claimed invention arranged as claimed, and remarks: “where the measurement of the respiratory cycle is based on *displacement (acceleration sensor)*...”, (emphasis added) citing Sontag (col. 2, lines 47-63; col. 4, lines 25-42; col. 5, line 11 - col. 6, line6). Paper 01102005, page 3.

Here, it appears to Applicant that the Examiner is equating *displacement* with *acceleration*.

Applicant respectfully disagrees that Sontag discloses *each and every element of the claimed invention arranged as claimed*.

The Examiner finds Sontag to disclose measurement of the respiratory cycle based on displacement and pressure, but then broadly concludes that measurement *based on displacement* is somehow the same as measurement *based on acceleration*.

Since Applicant cannot find any disclosure of an *acceleration sensor*, used *for gating*, anywhere in Sontag, it appears to Applicant that the Examiner's allegation of anticipation is based purely on a conclusory statement.

If the Examiner equates the Sontag linear accelerator (3) with the claimed acceleration sensor, Applicant respectfully submits that such an analogy is misguided, as Sontag clearly describes the linear accelerator (3) as being a gated device (col. 5, lines 15-20), and not a device used *for gating* another device.

If a gating device is designed to operate in response to receiving displacement data (as disclosed in Sontag), but instead receives acceleration data (a function of the second derivative of displacement, as disclosed in the instant application), Applicant submits that the gating device will not perform its intended function since incorrect output will result from the incorrect input.

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By alleging, for purposes of anticipation, that *displacement* is the same as *acceleration*, the Examiner has stretched the disclosure of Sontag beyond its permissible limits, since a reference cannot be anticipatory if it *fails to disclose each and every element of the claimed invention arranged as claimed*.

By alleging anticipation through a broad conclusory statement absent specific reference to anticipatory elements in the cited reference, Applicant respectfully submits that the Examiner has failed to properly meet the burden of a showing of anticipation.

Regarding Claim 10

Applicant has canceled Claims 11-12 and has amended Claim 10 to include all of the limitations of Claim 11-12, such that Claim 10 now recites, inter alia,

"...selecting a non-electrical *accelerometer*;
utilizing the non-electrical *accelerometer* to acquire information for cardiac gating; and
sensing cardiac vibrations with the accelerometer and acquiring an acceleration waveform with the accelerometer."

Dependent claims inherit all of the limitations of the parent claim.

For all the reasons set forth above regarding Claim 1, Applicant submits that the Examiner has failed to properly meet the burden of showing anticipation by failing to state with specificity where Sontag discloses *an accelerometer arranged as claimed in the instant invention*.

Furthermore, Applicant respectfully submits that the Examiner has failed to show where Sontag discloses *sensing cardiac vibrations with the accelerometer and acquiring an acceleration waveform with the accelerometer*.

Not only does Claim 10 include the limitation of *an accelerometer*, but it also includes the limitation of *sensing cardiac vibrations with the accelerometer and acquiring an acceleration waveform with the accelerometer*.

Nowhere in Sontag does Applicant find any disclosure of *sensing cardiac vibrations with the accelerometer and acquiring an acceleration waveform with the accelerometer*.

Absent anticipatory disclosure of each and every element of the claimed invention arranged as claimed, Sontag cannot be anticipatory.

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Regarding Claim 13 More Specifically

Claim 13 recites, "...*calculating a first derivative of the acceleration waveform to obtain a jerk waveform, determining a salient-peak of the jerk waveform, and utilizing the salient-peak as a trigger point for cardiac gating.*"

In alleging anticipation of Claim 13, it appears to Applicant that the Examiner has not fully considered *all* of the limitations set forth in Claim 13, since the instant office action rejects Claim 13 by making reference merely to the linear accelerator (3) disclosed in Sontag at col. 5, lines 16-19, with no reference made to the other limitations. Paper 01102005, page 3.

In comparing Sontag with the instant invention, and in particular comparing Sontag col. 5, lines 16-19, with the instant invention, Applicant finds Sontag to be absent any disclosure of *calculating a first derivative of the acceleration waveform to obtain a jerk waveform, determining a salient-peak of the jerk waveform, and utilizing the salient-peak as a trigger point for cardiac gating*, and submits that the Examiner has not stated with specificity where such disclosure may be found.

Absent anticipatory disclosure of each and every element of the claimed invention arranged as claimed, Sontag cannot be anticipatory.

Regarding Claim 16

Claim 16 recites, inter alia,

"...selecting a non-electrical sensor, the non-electrical sensor being a *force sensor*; and, utilizing the non-electrical sensor to acquire information *for gating*."

In alleging anticipation, the Examiner alleges that Sontag discloses each and every element of the claimed invention arranged as claimed, and remarks: "where the measurement of the respiratory cycle is based on...and *pressure (force sensor)*...", (emphasis added) citing Sontag (col. 2, lines 47-63; col. 4, lines 25-42; col. 5, line 11 - col. 6, line 6). Paper 01102005, page 3.

Here, it appears to Applicant that the Examiner is equating *pressure* with *force*.

Applicant respectfully disagrees that Sontag discloses *each and every element of the claimed invention arranged as claimed*.

The Examiner finds Sontag to disclose measurement of the respiratory cycle based on displacement and pressure, but then broadly concludes that *measurement based on pressure* is somehow the same as *measurement based on force*.

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Since Applicant cannot find any disclosure of a *force sensor*, used *for gating*, anywhere in Sontag, it appears to Applicant that the Examiner's allegation of anticipation is based purely on a conclusory statement.

If a gating device is designed to operate in response to receiving pressure data (as disclosed in Sontag), but instead receives force data (a value independent of area, as disclosed in the instant application), Applicant submits that the gating device will not perform its intended function since incorrect output will result from the incorrect input.

By alleging, for purposes of anticipation, that *pressure* is the same as *force*, the Examiner has stretched the disclosure of Sontag beyond its permissible limits, since a reference cannot be anticipatory if it fails to disclose each and every element of the claimed invention arranged as claimed.

By alleging anticipation through a broad conclusory statement absent specific reference to anticipatory elements in the cited reference, Applicant respectfully submits that the Examiner has failed to properly meet the burden of a showing of anticipation.

Regarding Claim 18

Applicant has canceled Claim 19 and amended Claim 18 to incorporate all of the limitations of Claim 19, such that Claim 18 now recites, inter alia,

"...selecting a non-electrical *accelerometer*;
arranging the *accelerometer* on a wrist of a patient; and,
utilizing the non-electrical *accelerometer to acquire information for peripheral pulse gating*."

Dependent claims inherit all of the limitations of the parent claim.

For all the reasons set forth above regarding Claim 1, Applicant submits that the Examiner has failed to properly meet the burden of showing anticipation by failing to state with specificity where Sontag discloses *an accelerometer arranged as claimed in the instant invention*.

Not only does Claim 18 include the limitation of an *accelerometer*, but it also includes the limitation of utilizing the non-electrical *accelerometer to acquire information for peripheral pulse gating*.

Nowhere in Sontag does Applicant find any disclosure of utilizing the non-electrical *accelerometer to acquire information for peripheral pulse gating*.

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Absent anticipatory disclosure of each and every element of the claimed invention arranged as claimed, Sontag cannot be anticipatory.

Regarding Claim 21

Claim 21 recites, inter alia,

“...a non-electrical sensor from a group consisting of *an accelerometer, force sensor, ultrasonic sensor, strain gage, photodiode, and an interferometer* resting on a vibrating surface...”

Dependent claims inherit all of the limitations of the parent claim.

In alleging anticipation, the Examiner alleges that Sontag discloses each and every element of the claimed invention arranged as claimed, and remarks: “the element strain gage is *well known in the art* to measure stress, pressure or force on a sensor, therefore, strain gage is a *functional equivalent* of pressure or force sensor.” (Emphasis added). Paper 01102005, page 3.

Here, Applicants notes that the Examiner does not reference Sontag for disclosure of the claimed elements arranged as claimed, but instead appears to rely upon an obviousness argument (well know in the art, and functional equivalent) for rejecting the subject claim.

If the Examiner intends to reject the claimed invention on obviousness grounds, then Applicant respectfully requests that the Examiner withdraw the finality of the instant office action, and properly apply grounds for an obviousness rejection, including a showing of where the references teach, suggest, or motivate one skilled in the art to arrive at each and every element of the claimed invention arranged to perform as the claimed invention performs.

Otherwise, and in view of the present rejection being under anticipation, Applicant respectfully submits that Sontag fails to disclose *each and every element of the claimed invention arranged as claimed*.

By alleging anticipation through a broad conclusory statement absent specific reference to anticipatory elements in the cited reference, Applicant respectfully submits that the Examiner has failed to properly meet the burden of a showing of anticipation.

Regarding Claim 25

Applicant has canceled Claim 36 and has amended Claim 25 to incorporate all of the limitations of Claim 36, such that Claim 25 now recites, inter alia,

“...providing a non-electrical *accelerometer*...”

Dependent claims inherit all of the limitations of the parent claim.

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For all the reasons set forth above regarding Claim 1, Applicant submits that the Examiner has failed to properly meet the burden of showing anticipation by failing to state with specificity where Sontag discloses an *accelerometer arranged as claimed in the instant invention*.

Absent anticipatory disclosure of each and every element of the claimed invention arranged as claimed, Sontag cannot be anticipatory.

In view of the amendment and foregoing remarks, Applicant submits that the Sontag does not disclose each and every element of the claimed invention arranged as claimed and therefore cannot be anticipatory. Accordingly, Applicant respectfully submits that the Examiner's rejection under 35 U.S.C. §102(b) has been traversed, and requests that the Examiner reconsider and withdraw of this rejection.

Rejections Under 35 U.S.C. §103(a)

Claims 19, 20, 31 and 33 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Sontag as applied to Claims 1, 18, 25 and 32 above, and further in view of Arcelus (U.S. Patent No. 6,149,602, hereinafter Arcelus).

Claims 37 and 38 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Sontag in view of Arcelus.

Applicant respectfully traverses these rejections for the following reasons.

Applicant has canceled Claim 19.

Claim 20 depends from Claim 18.

Claim 31 depends from Claim 25.

Claim 33 depends from Claim 1.

For at least the reasons set forth above regarding the allowability of the respective parent claims, Applicant submits that Arcelus fails to cure the deficiencies of Sontag, and that the dependent claims are therefore also allowable.

Furthermore, Applicant respectfully traverses these rejections for the following reasons.

Applicant respectfully submits that the obviousness rejection based on the References is improper as the References fail to teach or suggest *each and every element of the instant invention in such a manner as to perform as the claimed invention performs*. For an

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obviousness rejection to be proper, the Examiner must meet the burden of establishing a prima facie case of obviousness. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988). The Examiner must meet the burden of establishing that all elements of the invention are taught or suggested in the prior art. MPEP §2143.03.

Regarding Claim 20

Claim 20 recites, inter alia,

"...obtaining an acceleration waveform from the accelerometer, calculating a time delay for information being transmitted from a heart of the patient to a peripheral pulse, and characterizing the signal."

In rejecting Claim 20, the Examiner is silent as to where the References teach or suggest each and every element of the claimed invention. In fact, it appears to Applicant that the Examiner has not fully considered *all* of the limitations set forth in Claim 20, since the instant office action rejects Claim 20 by making no reference to the claimed elements. Paper 01102005, page 4.

In view of the absence of any teaching or suggestion of each and every element of the claimed invention in *any* Reference, Applicant respectfully requests that the finality of the instant office action be withdrawn so that the claimed invention can be fully examined on the merits, and that Applicant is given an opportunity to fully respond to the rejection.

Regarding Claim 33

Claim 33 recites, inter alia,

"...obtaining an acceleration waveform with the accelerometer, integrating the acceleration signal twice to obtain a resultant signal, band pass filtering the resultant signal to remove frequencies that cause drift in the resultant signal and frequencies corresponding to cardiac motion to obtain a filtered signal, analyzing the filtered signal for salient peaks, and obtaining a trigger point for respiratory gating."

In rejecting Claim 33, the Examiner is silent as to where the References teach or suggest each and every element of the claimed invention. More specifically, the Examiner is silent as to where the References teach or suggest ***"obtaining an acceleration waveform with the accelerometer"***, ***"integrating the acceleration signal twice to obtain a resultant signal"***, and ***"analyzing the filtered signal for salient peaks"***.

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In view of the absence of any teaching or suggestion of each and every element of the claimed invention in *any* Reference, Applicant respectfully requests that the finality of the instant office action be withdrawn so that the claimed invention can be fully examined on the merits, and that Applicant is given an opportunity to fully respond to the rejection.

Regarding Claim 37

Applicant has canceled Claim 38 and has amended Claim 37 to incorporate all of the limitations of Claim 38, such that Claim 37 now recites, inter alia,

“...providing a non-electrical *accelerometer*...”

For at least the reasons set forth above regarding the allowability of the respective parent claims, Applicant submits that Sontag fails to disclose the element of *an accelerometer arranged as claimed*, and that Arcelus fails to cure the deficiencies of Sontag relating to *an accelerometer that performs as the claimed invention performs*.

Accordingly, Applicant respectfully submits that a prima facie case of obviousness has not been established.

In view of the foregoing, Applicant submits that the References fail to teach or suggest each and every element of the claimed invention and are therefore wholly inadequate in their teaching of the claimed invention as a whole, fail to motivate one skilled in the art to do what the patent Applicant has done, fail to offer any reasonable expectation of success in combining the References to perform as the claimed invention performs, and discloses a substantially different invention from the claimed invention, and therefore cannot properly be used to establish a prima facie case of obviousness. Accordingly, Applicant respectfully requests reconsideration and withdrawal of all rejections under 35 U.S.C. §103(a), which Applicant considers to be traversed.

Applicant has amended the claims for presentation in better form for consideration on appeal. The claim amendments should only require a cursory review by the Examiner as they only include language presented in earlier examined claims. Accordingly, such amendments should not require further consideration or search.

In light of the foregoing remarks and amendments, Applicant respectfully submits that the proposed amendments and arguments comply with 37 C.F.R. §1.116 and should therefore be entered, and with their entry that the Examiner's rejections under 35 U.S.C. §102(b) and 35

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U.S.C. §103(a) have been traversed, and that the application is now in condition for allowance. Such action is therefore respectfully requested.

If a communication with Applicant's Attorneys would assist in advancing this case to allowance, the Examiner is cordially invited to contact the undersigned so that any such issues may be promptly resolved.

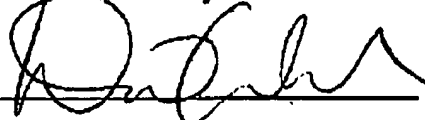
The Commissioner is hereby authorized to charge any additional fees that may be required for this amendment, or credit any overpayment, to Deposit Account No. 07-0845.

In the event that an extension of time is required, or may be required in addition to that requested in a petition for extension of time, the Commissioner is requested to grant a petition for that extension of time that is required to make this response timely and is hereby authorized to charge any fee for such an extension of time or credit any overpayment for an extension of time to the above identified Deposit Account.

Respectfully submitted,

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